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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/288,569	04/09/1999	HIROYUKI OHTAKI	DAIN:499	7620

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ALEXANDRIA, VA 223142805

EXAMINER

ANGEBRANDT, MARTIN J

ART UNIT	PAPER NUMBER
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1756

DATE MAILED: 06/12/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

MF-X

<b>Office Action Summary</b>	<b>Application No.</b> 09/288,569	<b>Applicant(s)</b> OHTAKI ET AL.	
	<b>Examiner</b> Martin J Angebrannndt	<b>Art Unit</b> 1756	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 02 April 2002.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-6,8-13 and 15-29 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6,8-13 and 15-29 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All   b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                  | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____                                    |

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1 The response provided by the applicant has been read and given careful consideration. Responses to the arguments offered by the applicant are presented after the first rejection to which they are directed. Rejections made in the prior office action, but not repeated below are withdrawn based upon the amendments to the claims and the arguments offered by the applicant.

2 The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3 Claims 1-3,5,6,8-10,12,13 and 15-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morii et al. WO/98/12607.

Morii et al. WO/98/12607 teaches the use of various adhesive agents (45/13-22). The disclosure of the impregnation of the adhesive with encapsulated diffusing materials is also disclosed. (pages 48-50). The use of adhesive layers which do not contain plasticizer or the like and acts as a barrier layer is disclosed. (25/22+). The use of tackifying agents and the varying of the amounts is disclosed on page 45 at lines 23-27. The use of rosin esters, terpene resin, phenolic resin and other resins as adhesive layers (5'') is disclosed on page 34 at lines 18-24. The disclosure of reaction type acrylic adhesives and UV curing adhesives is disclosed. (45/8-22). The use of trimethylol propane tri(meth)acrylate in the holographic recording layer is disclosed on page 16-17.

It would have been obvious to use either the terpene resin, phenolic resin or other resins disclosed containing tackifying agents or acrylic based adhesives as the adhesive layers in place of those specifically used in the examples based upon equivalent function. The examiner holds

that the resins cited inherently contain tackifying agents and that the reference establishes the obviousness of the modification of the content of these adhesives based upon the cited language.

The examiner notes that claims 1-2,8,9 embrace diffusion of the tackifier either into or out of the holographic layer, claims 3 and 10 embrace shifting of the tackifier from the holographic layer into the adhesive layer(s), but not the reverse, claims 12 and 20 embrace diffusion of the tackifier from the holographic layer to the adhesive layer, claims 15 and 21 embrace shifting of the tackifier into the holographic layer and claims 4,11 require a color tuning film between the hologram and one of the adhesive layers. Claims 22-27 use an acrylic or methacrylic monomer as the diffusion agent. The issue of claims 22-27 does not involve tackifier as these are unrecited and monomers are clearly known on the record to result in shifting based upon their size and level of curing and that acrylic adhesive layers are known in the art as useful with holograms. The examiner notes that claims 1-3, 8-10 and those dependent thereon embrace the use of adhesives containing tackifiers at a level which may cause diffusion of any tackifiers/adhesion promoters into the adhesive layer(s).

The examiner notes that in the US Patent corresponding to this reference, (6066378) is of record and is relied upon to establish the contents of the WIPO reference. The issue of tackifiers being contained in the adhesive layers has been addressed within this reference. The examiner notes that Fick's law describes the migration of components under the influence of a concentration gradient. The small molecules in the holographic layer and the adhesive layer migrate across the boundary from areas of high concentration to areas of lower concentration. The disclosure of the use of rosin esters, terpene resins, phenolic resins in adhesive layer (5") is disclosed on page 34 in the reference and in column 25 at lines 39-46 and 36/1-8 of the corresponding US patent. These are recited in the instant claims as tackifiers and clearly the reference teaches incorporation of these materials into the adhesive layer in the same manner as the instant specification on page 36 at lines 19-30 which specifically discuss the use of rosin,

terpene and synthetic resins such as styrene and the like. Clearly, it is appreciated within the art that the small molecules can be transferred between the hologram layer and adjacent layers as evidenced by the reference, particularly at 44/51-46/5 and 35/62-37/35 in the equivalent US patent. Merely the presence of these necessitates a shift in the replay wavelength. The examiner recognizes the arguments concerning tackifiers and points to the reference to tackifiers above in the reference and to the corresponding US patent which specifically recites tackifier resins to improve the adhesion of the adhesive layers (34/2-5). The examiner agrees that the resins themselves are not necessarily tackifiers, but notes that the addition of tackifiers and the addition of various resins, such as terpenes, rosins and synthetic to the adhesive layers lend themselves to the examiner's interpretation, rather than the applicant's. Clearly, the addition of tackifiers is disclosed. The examiner's position is that it would have been obvious to use tackifiers. The examiner notes that this argument does not address the issue of (meth)acrylic monomers which is covered by the disclosure of acrylic adhesives in the references and column 33 at lines 54-55 of the corresponding US patent. The shifting to shorter wavelengths is caused by migration of molecules from the holographic layer to the adjacent/adhesive layer due to the contraction of the holographic fringes (opposite of swelling) bring them closer together, while the shift to longer wavelengths is caused by migration of small molecules into the holographic layer causing swelling and an increase in the distance between fringes. The incorporation of materials which swell or solubilize the hologram into the adhesive layer is disclosed on page 48-50 of the reference and in column 35 at lines 62-col. 36/line 25. The fact that migration across the boundary is taught renders it obvious to one skilled in the art that migration in the opposite direction is possible due to Fick's law. The deficit of tackifiers in the adhesive layer would draw them and other small molecules from the adjacent holographic layer unless a barrier layer is present. This is an inherent feature based upon the concentration of these. The teachings of Ueda et al. '598 and Smothers et al. EP 0407772 support this position. The rejection stands.

4 Claims 1-6,8-13 and 15-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ueda et al. '598 and Smothers et al. EP 0407772, in view of Morii et al. WO/98/12607.

Ueda et al. '598 teaches in the example with respect to figure 23 a substrate releasable from an adhesive film (101) from figure 22, an adhesive layer (103), a holographic film (2) a second adhesive layer (55), a color tuning film (54), a third adhesive layer (56) and a second substrate (53). The holographic material is omnidex -706 by Dupont, a photopolymeric composition and the adhesives are NOA-61. (13/8-20) Color tuning films are described. (19/41-20/31) The application of the color tuning film directly to the hologram is disclosed with respect to figure 12(b-5).

Smothers et al. EP 0407772 teaches the use of a layered element to transfer monomer, plasticizer or other diffusable materials between a hologram and an adjacent layer containing these. (8/26-50) The swelling or shrinking of the fringes is disclosed. curing of the hologram and the diffusion element may be done at any time to reduce diffusion. (8/15-9/7) The use of various plasticizers and surfactants is disclosed. (6/17-38). The use of adhesion modifiers in photopolymerizable films is disclosed. (6/17-19) The use of trimethylol propane triacrylate is disclosed. (5/30-31)

It would have been obvious to one skilled in the art to modify the teachings of Ueda et al. '598 by using the adhesive layers disclosed by Morii et al. WO/98/12607 in place of the adhesive layer of Ueda et al. and to control the replay wavelength of the hologram by careful control of the amount of diffusible components in a manner analogous to that disclosed within Smothers et al. EP 0407772.

The examiner relies upon Smothers and Ueda et al. to establish the species, ie. plasticizers, monomers, etc., which cause the shifting and relies upon the secondary references to establish that tackifiers and resinous adhesives containing them are known in the art and would be present in adhesive compositions.

In addition to the basis provided above, the examiner notes the teachings with respect to color tuning films. The examiner notes that without a barrier layer, one of ordinary skill in the art would take into account the color tuning effects of Ueda et al. '598 and Smothers et al. EP 0407772 which are analogous to those of Morii et al. WO/98/12607. It would be sheer folly for one skilled in the art to fail to do so as the replay wavelength would then be other than that desired. The rejection stands.

5        Claims 1-6,8-13,15-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ueda et al. '598 and Smothers et al. EP 0407772, in view of Morii et al. WO/98/12607, further in view of Yamagishi et al. JP 03-157684, Tarumi et al. '107 or Weber et al. '863.

Yamagishi et al. JP 03-157684 teaches the use of polymerizable adhesives comprising acrylates and/or methacrylates together with a photoinitiator which do not damage the hologram.

Tarumi et al. '107 teaches the use of various adhesives including acrylate and Epoxy adhesives which are UV curable (table 1 and 5/40-6/65)

Weber et al. '863 teaches the use of various adhesives adjacent to holographic recording media including UV curing acrylates. (8/40-62) The use of diffusion elements is also disclosed. (7/6-9)

In addition to the basis provided above, the examiner cites Yamagishi et al. JP 03-157684, Tarumi et al. '107 or Weber et al. '863 to support the position that acrylic/methacrylic curable adhesives are known to be useful with holograms and that the combination set forth above would have been obvious to one skilled in the art.

The response provided above is relied upon without further comment.

6        Claims 1-6,8-13 and 15-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ueda et al. '598 and Smothers et al. EP 0407772, in view of Morii et al. WO/98/12607,

further in view of Yamagishi et al. JP 03-157684, Tarumi et al. '107 or Weber et al. '863 combined with Miwa et al. '271 and Sato et al. '614.

Miwa et al. '271 teach the use of trimethylolpropane triacrylate (8/47-48), trimethylolpropane trimethacrylate (8/48) and methoxypolyethylene glycol acrylate (8/63) in a UV curing adhesive. (note misspellings)

Sato et al. '614 teach the use of trimethylolpropane triacrylate (5/24), trimethylolpropane trimethacrylate (5/39) and methoxydiethylene glycol methacrylate (5/40-41) in the holographic layer.

In addition to the basis provided above, the examiner holds that it would have been obvious to use UV curing adhesive layers within the scope of Morii et al. WO/98/12607, such as those disclosed by Miwa et al. '271, in the invention of Ueda et al. '598 and Smothers et al. EP 0407772 as modified by Morii et al. WO/98/12607 combined with either Yamagishi et al. JP 03-157684, Tarumi et al. '107 or Weber et al. '863 with a reasonable expectation of achieving as useful hologram based upon the compatibility of these monomers with the materials of the holographic layer as evidenced by Morii et al. WO/98/12607, Sato et al. '614 and Smothers et al. EP 0407772 to these monomers, particularly trimethylol propane tri(meth)acrylates.

7 Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

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will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

New claims

8 Any inquiry concerning this communication or earlier communications from the examiner should be directed to Martin Angebranndt whose telephone number is (703) 308-4397.

I am normally available between 7:30 AM and 5:00 PM, Monday through Thursday and 7:30 AM and 4:00 PM on alternate Fridays.

If repeated attempts to reach me are unsuccessful, my supervisor may be reached at (703) 308-2464.

Facsimile correspondence should be directed to (703) 872-9311.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0661.



Martin J. Angebranndt  
Primary Examiner, Group 1750  
June 10, 2002